How Scientists Identify a Planting Area for Redhead Grass

Summary
When you are finished growing your plants, they will be planted in the Chesapeake Bay. The planting location was chosen based on several criteria including salinity, water quality, depth, wave energy, and sediment type. In this activity, you will learn how to use multiple data sets to choose a redhead grass planting site.

Maryland State Assessment Outcomes

<u>Nature of Science</u>: Students will demonstrate the ability to interpret and explain information generated by their exploration of scientific phenomena.

<u>Applications of Science</u>: Students will demonstrate the ability to apply science in solving problems and making personal decisions about issues affecting the individual, society and the environment.
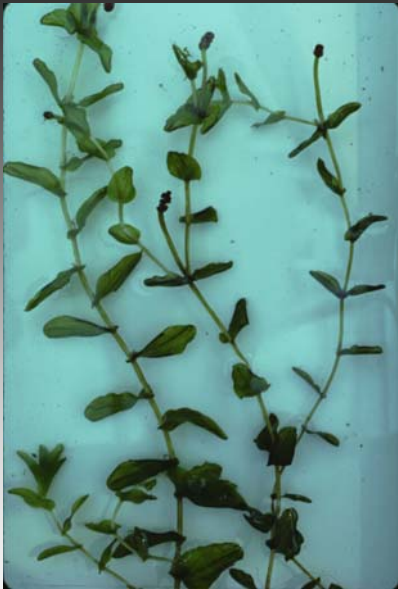
<u>Math – Statistics</u>: Collect, organize, and display data.

Maryland State Assessment Indicators

<u>Nature of Science</u>: Generate a consensus based on data.

<u>Applications of Science</u>: Use knowledge of science and available technology to solve a practical problem.

<u>Math – Statistics</u>: Collect, organize, display, and interpret data for a given situation using appropriate displays. Use data analysis to write an evaluative argument in a real life situation.

Materials

<u>Per class</u>:

One "Mapping Activity Packet" per group of 3-4 students

One set of Transparencies of "Mapping Activity Packet" for entire class to share

Black Transparency Markers or Permanent Markers

Making Connections

You are growing bay grass to plant in the Chesapeake Bay to restore habitat for many bay creatures. Before the bay grass can be planted an appropriate site must be chosen. You will use maps of different factors that affect redhead grass growth to determine where redhead grass has a favorable chance of survival. Scientists use maps similar to these along with computer software to choose the sites where we will plant the redhead grass you are now growing.

Background

Refer to the *Potamogeton perfoliatus* Fact Sheet Lesson for background information about redhead grass.

Visit the Bay Grasses in Classes website at www.dnr.maryland.gov/bay/sav for additional background information.

Procedure

The following conditions are optimal for the survival of redhead grass.

Boat Traffic – Low	Wave Energy – Medium/High
Salinity 0-20 ppt	Nutrients - Fair

1. Each group of students should have three transparencies with a map on it. Each map will have the same parameter (example: Wave Energy), but each transparency will have a different time period (1600, 1975, and Today).
2. Use the above requirements to determine which areas on your maps are not optimal.
3. Use a black marker to color in any areas that are not suitable for redhead grass survival.
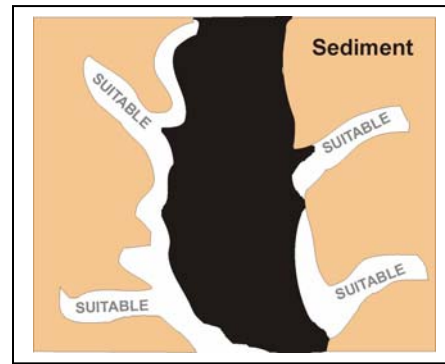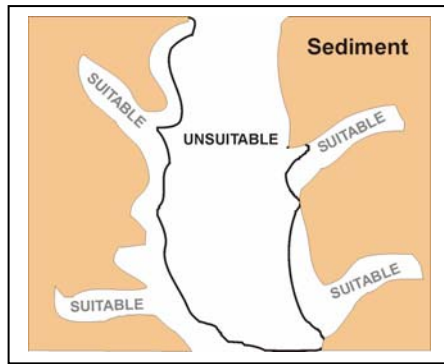
4. The entire group should answer the questions below.
    A. Which parameter did your group investigate?
    B. How did your parameter change during each time period?
    C. What trends did you notice relating to your parameter?
    D. Why do you think these changes have taken place?
5. When all groups have finished coloring the unsuitable areas, one student from each group should explain which parameter their group was responsible for. They should also explain why they colored the areas that they did.
6. All the maps for the same time period should then be assembled and put on the top of the overhead projector. First, each group should put their 1600 map on the overhead. All 1600 maps should be aligned and any areas of water that are still white are suitable for planting.
7. Next the 1975 maps should be assembled.
8. Repeat the procedure with the Today maps.
9. Answer the "Time Period Questions" as a class.

Assessment/Evaluation

Time Period Questions
1. What happened to water quality from 1600 to 1975?
2. What happened to water quality from 1975 to Today?
3. Why do you think water quality has changed this way?
4. Overall, what happened to the suitable planting area from 1600 to 1975? Why?
5. Overall, what happened to the suitable planting area from 1975 to Today? Why?